

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No. : **10/538913**
Applicant : Venturelli
Filing date : June 13, 2005
Title : Endoluminal Prosthesis
TC/A.U. : 3731
Examiner : **McEvoy**
Docket No. : **5659**
Customer No. : 26936

Commissioner for Patents
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APPELLANTS' REPLY BRIEF

Please consider the following comments on five points of the Examiner's Answer:

Relevant passage of the Examiner's Answer (EA):

[01] Page 5, lines 7-8 of the EA

Fischell et al. teach using bridges to attach one outer lobe of opposing w-shaped modules for increased flexibility while allowing for the stent to have reduced diameter upon crimping onto a balloon, as well as reduced flaring of the outer lobes.

[02] Page 5, lines 11-13 of the EA

Here, in addition to providing one shortened outer lobe, Fischell et al. essentially teach that providing bridges on every other outer lobe prevents the bridge from interfering with each other when the stent is crimped to a small diameter.

[03] Page 6, lines 1-2 of the EA

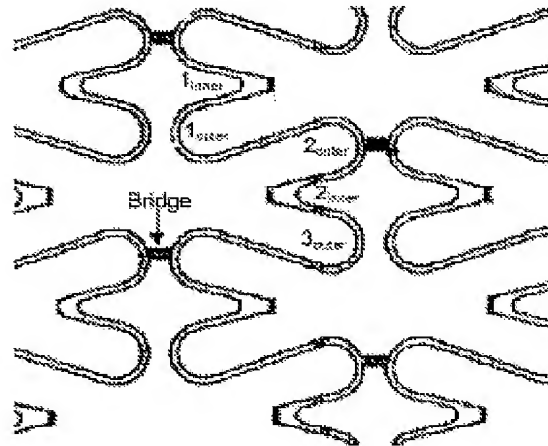
...it would have been obvious... to modify Dang's stent to include Fischell et al's bridges.

[04] Page 6, lines 4-8 of the EA

...since Dang discloses that the bridge should connect modules that open up towards each other , it would have been obvious...to attach outer lobes (in view of Fischell et al.) only to modules that open up towards each other (in view of Dang).

[05] Page 6, lines 8-10 of the EA

This would result in the structure shown below (of course with Fischell et al.'s extended bridge shape).



examiner's structure

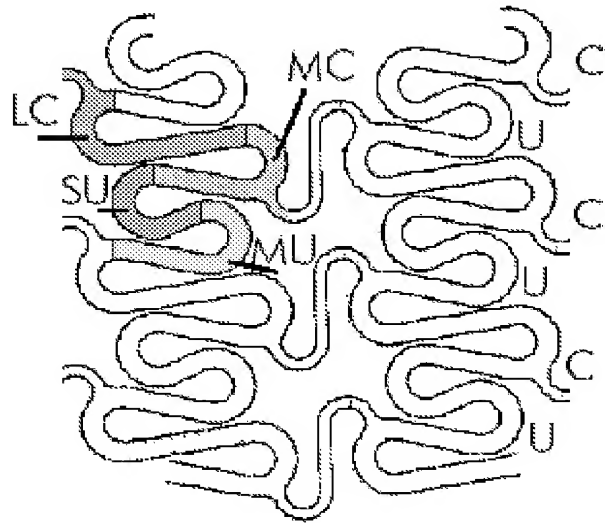
[01] Page 5, lines 7-8 of the EA

The Examiner states that “Fischell et al. teach using bridges to attach one outer lobe of opposing w-shaped modules for increased flexibility while allowing for the stent to have reduced diameter upon crimping onto a balloon, as well as reduced flaring of the outer lobes.”

Fischell et al. column 4, lines 25-29, says “Each of the interior sets of strut members 20 consists of at least one long connected strut member 24L (LC), at least one medium length connected strut member 24MC (MC), at least one medium length unconnected strut member 24MU (MU) and at least one short unconnected strut member 24S (SU).” This is Fischell’s module definition.

Col 2, lines 37-43: "... those curved sections of adjacent circumferential sets of strut members that are connected are connected with flexible longitudinal connecting links, and many (typically one-half) of the curved sections are unconnected."

Fischell et al. describes a stent 10, having a multiplicity of interior circumferential sets of strut members 20, each of the strut member consists of MC, LC, SU, MU struts. As shown in the figure above, the serpentine is a sequence of lobes, in particular a sequence of connected (C) and unconnected (U) lobes. Fischell's Certificate of Correction clearly indicates that the essential feature of this patent is the 50% ratio between the unlinked lobes and the linked lobes



Moreover, at col 2, lines 23-27, "A unique feature of the present invention is that each of the strut members whose curved sections are unconnected has a shorter longitudinal length as compared to the longitudinal length of the strut members that are connected by a longitudinal connecting link."

[02] Page 5, lines 11-13 of the EA

The Examiner states: "Here, in addition to providing one shortened outer lobe, Fischell et al. essentially teach that providing bridges on every other outer lobe prevents the bridge from interfering with each other when the stent is crimped to a small diameter. "

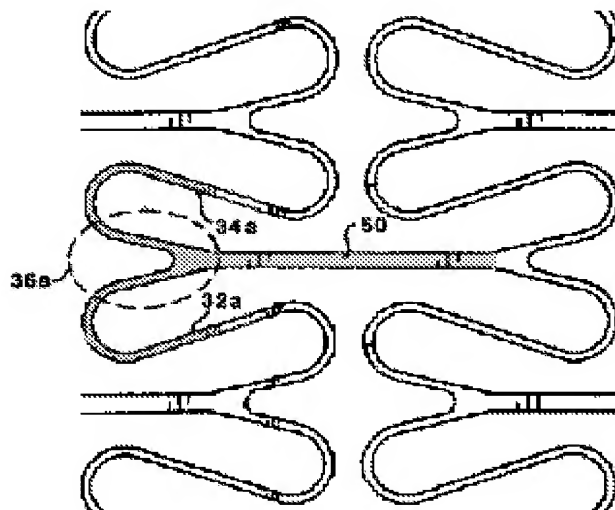
As shown in the figure above, looking the serpentine, Fischell et al. describes a module comprising two unconnected short lobes and two connected long lobes.

Fischell teaches one to use bridges to attach longer lobes of opposing Fischell's modules and above all to connect one lobe every two lobes.

Thus, Fischell teaches to provide bridges on every long lobe and on every two lobes.

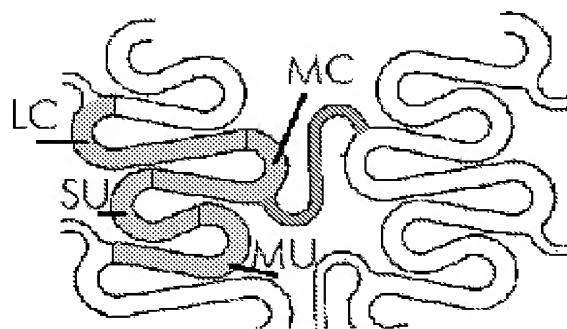
The examiner concludes "...it would have been obvious... to modify Dang's stent to include Fischell et al's bridges."

Dang column 4, lines 66-67: "Each of the W-shaped elements 30 includes a center section 36a and two outside legs 32a and 34a." This is Dang's module definition.



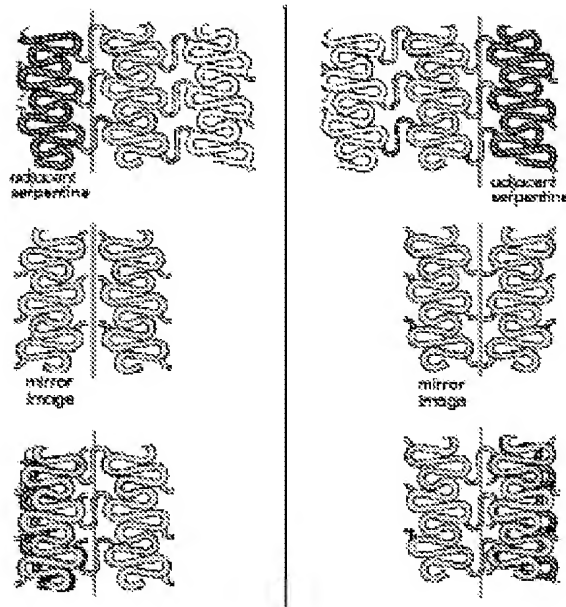
Column 5, lines 23-29: "W-shaped elements are connected to each other by a tie member 50 that is attached to the center sections of each of the W-shaped elements 32a/30b. It is preferred that the tie members 50 are attached at the peak or apex of the center sections 36." This is Dang's bridge definition.

Fischell et al. Col 4. lines 43-54: "Each of the connected curved sections is joined to an adjacent connected curved section by means of a longitudinally extending, flexible longitudinal connecting link 18, that consists of a central segment 13, a bottom curved segment 14 and a top curved segment 15. The optimal placement of the junction lines 16 and 17 is at or near the connecting line 22 that joins a curved section 11 to a diagonal section 19." This is Fischell et al.'s bridge definition. Fischell's bridge does not project from or connect the apex of the lobe and does not connect lobes, but does project from or connect a line that extends between the arm and the lobe.



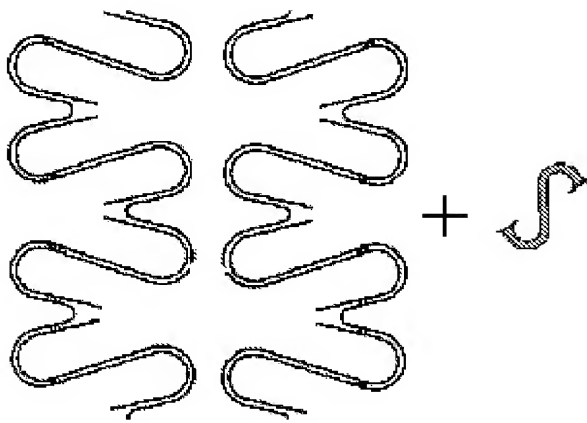
The Examiner's conclusion that it would have been obvious to modify Dang's stent to include Fischell et al.'s bridges is wrong because:

- (1) Both Dang and Fischell lack features (m), (n) and (o) for Dang and (j), (k), (m) and (o) for Fischell. Both lack features (m) and (o).¹
- (2) Fischell's bridge does not project from or connect the apexes of the lobes of adjoining lines (the mirror image lines) and does not connect lobes. Rather, it projects from or connects a portion of the lines that extend between the arm and the lobe.
- (3) Fischell's adjoining lines are connected with bridges one lobes every two lobes
- (4) Fischell teaches to provide a bridges on every long lobe
- (5) Fischell teaches to provide a bridges not extended along a longitudinal axis because the adjoining lines are not mirror image but shifted angularly:



Furthermore, to modify Dang's stent (D) with Fischell et al.'s bridges (F), it is necessary to decide the position of the bridges in the serpentine. Dang discloses that the bridge should connect modules that open up towards each other (The Examiner agrees, see page 6, lines 4-5).

¹ Feature (m): "each said bridge directly connects two opposed outer lobes of two adjacent lines and each said bridge extends along a longitudinal axis parallel to the longitudinal axis of the tubular body". Feature (o): "each said bridge is provided between two adjacent lines, for every five complete lobes of a line, three outer lobes and two inner lobes".



Dang, at column 5, lines 20-22, says “FIG. 3 depicts one such pair of W-shaped elements 30a and 30b that open towards each other from adjacent cylindrical sections 20.”

The only reasonable interpretation of “W-shaped elements that open towards each other” is represented in figure 3.

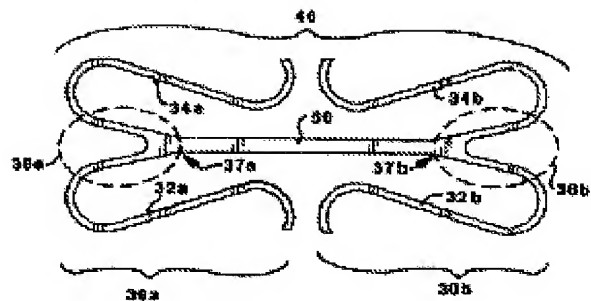
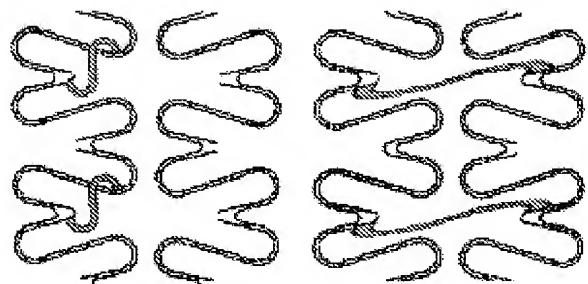


FIG. 3

Considering Dang’s teaching, it is impossible to modify stent D to include bridges F without modifying the bridges F. Anyway, the DF new geometry does not have all the limitations of claim 1.



Therefore, it would not have been obvious to modify Dang’s stent to include Fischell et al.’s bridges.

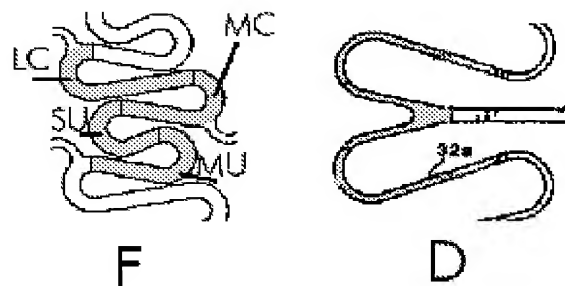
[04] Page 6, lines 4-8 of the EA

“...since Dang discloses that the bridge should connect modules that open up towards each other , it would have been obvious...to attach outer lobes (in view of Fischell et al.) only to modules that open up towards each other (in view of Dang).”

As discussed above, Fischell teaches to use bridges to attach longer lobes of opposing Fischell et al.'s modules, and:

- (6) Dang and Fischell lack features (m) and (o)
- (7) Fischell's bridge does not project from or connect the apexes of the lobes of adjoining lines (the mirror image lines) and does not connect lobes but instead projects from or connects a portion of the lines that extend between the arm and the lobe.
- (8) Fischell's adjoining lines are connected with bridges one lobes every two lobes
- (9) Fischell teaches to provide a bridges on every long lobe
- (10) Fischell teaches one to provide bridges not extending along a longitudinal axis because the adjoining lines are not mirror image but shifted angularly:

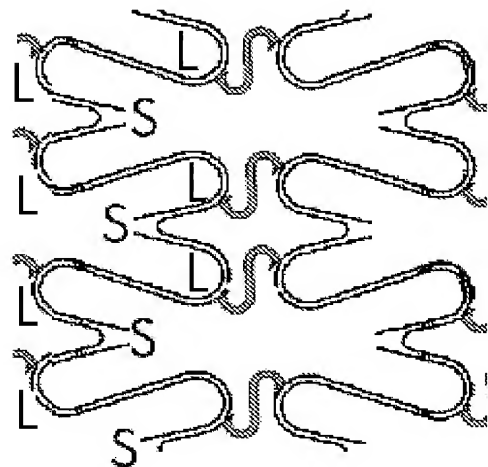
Modules F and modules D are completely different:



If one were to force the combination, applying Fischell et al.'s teaching "use bridges to attach longer lobes of opposing modules" to Dang's modules, he would obtain the FS geometry illustrated in the figure.

Even the FD new geometry does not disclose all the limitations of claim 1.

Therefore, it would not have been obvious to modify Dang's stent to include Fischell et al.'s bridges.



“This would result in the structure shown below (of course with Fischell et al.’s extended bridge shape)...”

Fischell et al. Col 6, lines 52-60 states

“Although the greatest longitudinal flexibility for the stent 10 is obtained by connecting some of adjacent sets of strut members with flexible longitudinal connecting links (like the link 18), it should be understood that short, straight links could be used to connect adjacent curved sections. This design concept is shown in FIG. 5 that is a layout view of a stent 60 that

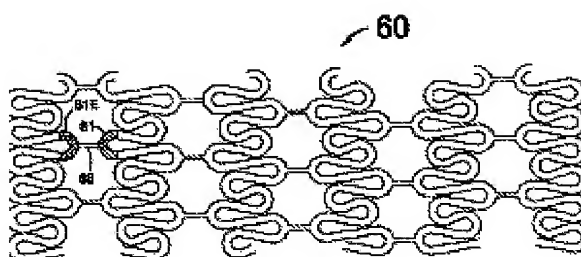
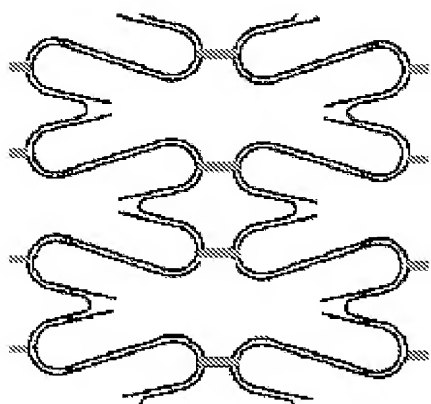


FIG. 5

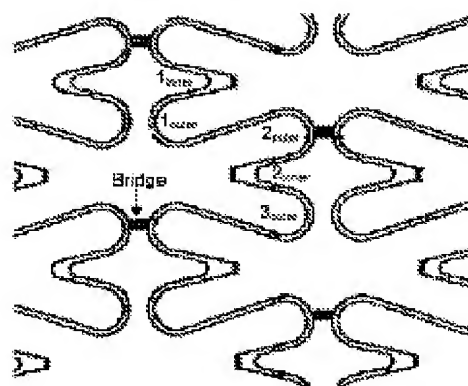
has connected curved sections 61 and 61E that are connected by straight connecting links 68.”



If one were to apply one alternative embodiment of Fischell et al.’s bridges (and not the preferred embodiment: flexible longitudinal connecting links + optimal placement near the connecting line that joins a curved section to a diagonal section) to Dang’s modules, he would obtain the FD geometry illustrated in the figure. Regardless, the FD new geometry would not have all the limitations of claim 1.

The structure shown in the Examiner’s Answer is obtained by connecting only certain curved sections of the module in a completely arbitrary (or inventive) way. Neither Dang nor Fischell teaches one to do this.

Dang teaches: one pair of W-shaped elements 30a and 30b that open towards each other from adjacent cylindrical sections 20... are connected to each other by a tie member that is attached to the center sections of each of the W-shaped elements.



examiner's structure

Fischell teaches: each of the strut members whose curved sections are unconnected has a shorter longitudinal length as compared to the longitudinal length of the strut members that are connected by a longitudinal connecting link.

We conclude that it would not have been obvious from the prior art to modify Dang's stent to include Fischell et al.'s bridges and that, had one done so, the invention described by the claims at issue would not have resulted.

Respectfully,

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